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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/542,040

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John Mize

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EXAMINER

BERMAN, JASON

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/542,040	Applicant(s) MIZE ET AL.	
	Examiner Jason M. Berman	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/20/2005</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Status of the Claims

Claims 1-38 are pending in the current application.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 7, 11-23, 26, 30-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Subramani (US 6,254,746).

As to claim 1, Subramani discloses a coil assembly comprising:

- At least one coil having a thickness (figure 2: showing coil 104);
- At least one boss coupled to the coil (figure 2: showing boss 120 and 124 connected to coil 104);
- Wherein the boss comprises at least two support sections (figure 4: detail of boss 120 with section 254 and section 252); and
- The diameter of the boss is greater than the thickness of the at least one coil (figure 4; col 8 lines 44-46: length L2 (a portion of the diameter of the boss 120) is 0.5 inches; col 9 line 67: 1/8 inch thick coil).

As to claims 2-4, Subramani discloses the coil comprises titanium (col 9 lines 66-67: coil 104 is made of titanium).

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As to claim 7, Subramani discloses the boss comprises the same material as the coil (col 9 lines 66-67: coil 104 is made of titanium; figure 4/col 7 lines 14-15: part 252 of boss 120 is titanium).

As to claim 11, Subramani discloses the boss comprises a first and second support sections and the diameter of the sections are different (Figure 4: showing sections 254 and 252 with different diameters).

As to claims 12-14, Subramani discloses a sputtering chamber containing the coil (figure 1: sputter deposition chamber with coil 104; col 1 lines 1-20: use of coil of invention in plasma generation for sputter deposition).

As to claims 15-17, the boss of Subramani is attached to the coil (figure 4: part 254 supporting unlabeled coil). Because both the attachment piece 254 and the coil are composed of the metal titanium, heat transfer will inherently occur between these parts while in contact.

As to claims 18-19, Subramani discloses the coil has a thickness less than 0.13 inches (col 9 line 67: 1/8 inch thick coil).

As to claim 20, Subramani discloses a coil assembly comprising:

- Providing a coil having a thickness (figure 2: showing coil 104);
- Providing at least one boss coupled to the coil (figure 2: showing boss 120 and 124 connected to coil 104);
- Wherein the boss comprises at least two support sections (figure 4: detail of boss 120 with section 254 and section 252); and

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- The diameter of the boss is greater than the thickness of the at least one coil (figure 4; col 8 lines 44-46: length L2 (a portion of the diameter of the boss 120) is 0.5 inches; col 9 line 67: 1/8 inch thick coil).

As to claims 21-23, Subramani discloses the coil comprises titanium (col 9 lines 66-67: coil 104 is made of titanium).

As to claim 26, Subramani discloses the boss comprises the same material as the coil (col 9 lines 66-67: coil 104 is made of titanium; figure 4/col 7 lines 14-15: part 252 of boss 120 is titanium).

As to claim 30, Subramani discloses the boss comprises a first and second support sections and the diameter of the sections are different (Figure 4: showing sections 254 and 252 with different diameters).

As to claims 31-33, Subramani discloses a sputtering chamber containing the coil (figure 1: sputter deposition chamber with coil 104; col 1 lines 1-20: use of coil of invention in plasma generation for sputter deposition).

As to claims 34-36, the boss of Subramani is attached to the coil (figure 4: part 254 supporting unlabeled coil). Because both the attachment piece 254 and the coil are composed of the metal titanium, heat transfer will inherently occur between these parts while in contact.

As to claims 37-38, Subramani discloses the coil has a thickness less than 0.13 inches (col 9 line 67: 1/8 inch thick coil).

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Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 5-6 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subramani.

As to claims 5-6 and 24-25, Subramani discloses the use of three bosses (figure 1: showing boss 120 and 124, and second unlabeled boss 120). It would be obvious to one of ordinary skill that the cutaway illustration of figure 1 implies the inclusion of additional bosses to support the coil through the entire circumference of the sputtering chamber. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include at least 5 bosses because each boss supplies additional support to the multiple turn coil of Subramani.

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6. Claims 8-10 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subramani as applied to claims 1 and 20 above, and further in view of Hong (US 2001/0007302, as cited in IDS).

As to claims 8 and 27, Subramani is silent as to the boss being coupled to the coil through a welded joint.

Hong discloses a sputtering apparatus and method in which a coil is used (figure 2: showing coils 112 and 104). Hong also discloses the use of welding to join the coils to thermally couple the coils and allow heat transfer (paragraph 23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use welding, as disclosed by Hong, in the coil and boss structure of Subramani, because welding allows for effective coupling while maintaining thermal contact.

As to claims 9 and 28, Subramani discloses the weld is formed by e-beam welding (paragraph 23).

As to claims 10 and 29, Subramani is silent as to the boss and the coil being a continuous piece of metal.

Hong discloses a coil in a sputtering system in which the coil contains flanges as part of the coil structure (figure 5, paragraph 30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include protrusions from the coil as part of the coil itself, as disclosed by Hong, to form the coil and support structure of Subramani, because a

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single continuous piece of material would be less prone to detachment than two pieces of material connected by alternative means.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Berman whose telephone number is (571)270-5265. The examiner can normally be reached on M-R 8am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571)272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/
Supervisory Patent Examiner, Art Unit 1753

/J. M. B./
Examiner, Art Unit 1795

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